Vol. 31, pp. 1–102

CONTENTS

No. 1, 1997

2 **J. Buckmaster and T. G. Vedarajan**

Self-Heating Effects in Thermoset Composites

22 **Vikram Pillai, Antony N. Beris and Prasad Dhurjati**

Intelligent Curing of Thick Composites Using a Knowledge-Based System

52 **S. Ramakrishna**

Analysis and Modeling of Plain Knitted Fabric Reinforced Composites

71 **Mark R. Garnich and Andrew C. Hansen**

A Multicontinuum Theory for Thermal-Elastic Finite Element Analysis of Composite Materials

87 **Y. M. Liu, C. Ganesh, J. P. H. Steele and J. E. Jones**

Fiber Optic Sensor Development for Real-Time *In-Situ* Epoxy Cure Monitoring

Vol. 31, pp. 103–209

CONTENTS

No. 2, 1997

104 F. C. Wong and A. Ait-Kadi

On the Prediction of Mechanical Behavior of Particulate Composites Using an Improved Modulus Degradation Model

128 Jeffery R. Schaff and Barry D. Davidson

Life Prediction Methodology for Composite Structures. Part I—Constant Amplitude and Two-Stress Level Fatigue

158 Jeffery R. Schaff and Barry D. Davidson

Life Prediction Methodology for Composite Structures. Part II—Spectrum Fatigue

182 R. W. Rydin, P. C. Varelidis, C. D. Papaspyrides and V. M. Karbhari

Glass Fabric Vinyl-Ester Composites: Tailoring the Fiber Bundle/Matrix Interphase with Nylon Coatings to Modify Energy Absorption Behavior

Vol. 31, pp. 211–314

CONTENTS

No. 3, 1997

212 M. C. Li, J. J. Wu, A. C. Loos and J. Morton

A Plane-Strain Finite Element Model for Process-Induced Residual Stresses in a Graphite/PEEK Composite

244 R. Pitchumani, J. W. Gillespie, Jr. and M. A. Lamontia

Design and Optimization of a Thermoplastic Tow-Placement Process with *in-situ* Consolidation

276 H. Jeong

Effects of Voids on the Mechanical Strength and Ultrasonic Attenuation of Laminated Composites

293 Jeffry S. Welsh and Donald F. Adams

An Experimental Investigation of the Mini-Sandwich Laminate as Used to Obtain Unidirectional Composite Compression Strengths

Vol. 31, pp. 315–426

CONTENTS

No. 4, 1997

316 **J. I. Song and K. S. Han**

Mechanical Properties and Solid Lubricant Wear Behavior of $Al/Al_2O_3/C$ Hybrid Metal Matrix Composites Fabricated by Squeeze Casting Method

345 **X. H. Jian, H. S. Tzou, C. J. Lissenden and L. S. Penn**

Damage Detection by Piezoelectric Patches in a Free Vibration Method

360 **Per S. Frederiksen**

Experimental Procedure and Results for the Identification of Elastic Constants of Thick Orthotropic Plates

383 **Erik Persson, Ingvar Eriksson and Peter Hammersberg**

Propagation of Hole Machining Defects in Pin-Loaded Composite Laminates

409 **Chihdar Yang, Su-Seng Pang and Yi Zhao**

Buckling Analysis of Thick-Walled Composite Pipe under External Pressure

Vol. 31, pp. 427–527

CONTENTS

No. 5, 1997

428 Nobuyuki Tsuji, George S. Springer and István Hegedüs

The Drapability of Aligned Discontinuous Fiber Composites

466 Amos Alexander and Jerome T. Tzeng

Three Dimensional Effective Properties of Composite Materials for Finite Element Applications

486 M. V. Balakrishnan, B. Bansal and M. Kumosa

Biaxial Testing of Unidirectional Carbon-Epoxy Composite Using Biaxial Iosipescu Test Fixture

509 G. Kalaprasad, Kuruvilla Joseph and Sabu Thomas

Influence of Short Glass Fiber Addition on the Mechanical Properties of Sisal Reinforced Low Density Polyethylene Composites

Vol. 31, pp. 529–638 CONTENTS No. 6, 1997

530 **Keiji Ogi and Nobuo Takeda**

Effects of Moisture Content on Nonlinear Deformation Behavior of CF/Epoxy Composites

552 **Kenneth J. Bowles, Madhu Madhukar, Demetrios S. Papadopoulos, Linda Inghram and Linda McCorkle**

The Effects of Fiber Surface Modification and Thermal Aging on Composite Toughness and Its Measurement

580 **Shoji Kamiya and Hideki Sekine**

A Discussion on the Damage Mechanism and the Apparent Fracture Strength of Notched Fiber-Reinforced Composite Laminates

596 **Madhu S. Madhukar, Kenneth J. Bowles and Demetrios S. Papadopoulos**

Thermo-Oxidative Stability and Fiber Surface Modification Effects on the Inplane Shear Properties of Graphite/PMR-15 Composites

619 **Yasushi Miyano, Masayuki Nakada, Michael K. McMurray and Rokuro Muki**

Prediction of Flexural Fatigue Strength of CRFP Composites under Arbitrary Frequency, Stress Ratio and Temperature

Vol. 31, pp. 639–744

CONTENTS

No. 7, 1997

640 **Tarek H. Almusallam**

Analytical Prediction of Flexural Behavior of Concrete Beams Reinforced by FRP Bars

658 **A. Dasgupta and K. H. Huang**

A Layer-Wise Analysis for Free Vibrations of Thick Composite Spherical Panels

672 **Lalit K. Jain and Yiu-Wing Mai**

Stresses and Deformations Induced during Manufacturing. Part I: Theoretical Analysis of Composite Cylinders and Shells

696 **Lalit K. Jain, Brian G. Lutton, Yiu-Wing Mai and Rowan Paton**

Stresses and Deformations Induced during Manufacturing. Part II: A Study of the Spring-In Phenomenon

720 **Vivek Rohatgi and L. James Lee**

Moldability of Tackified Fiber Preforms in Liquid Composite Molding

Vol. 31, pp. 745–849

CONTENTS

No. 8, 1997

746 Zhi-He Jin and Yiu-Wing Mai

Residual Strength of an ARALL Laminate Containing a Crack

762 Glyn Lawcock, Lin Ye and Yiu-Wing Mai

Progressive Damage and Residual Strength of a Carbon Fibre Reinforced Metal Laminate

788 J. K. Chen, F. A. Allahdadi and C. T. Sun

A Quadratic Yield Function for Fiber-Reinforced Composites

812 E. D. Reedy, Jr., F. J. Mello and T. R. Guess

Modeling the Initiation and Growth of Delaminations in Composite Structures

832 C. Soutis and D. Turkmen

Moisture and Temperature Effects of the Compressive Failure of CFRP Unidirectional Laminates

Vol. 31, pp. 851–951

CONTENTS

No. 9, 1997

852 **B. Prinz and E. Schnack**

Determination of Stress Gradients in Fibrous Composites by X-Ray Diffraction from Fillers

874 **L. Daridon, B. Cochelin and M. Potier Ferry**

Delamination and Fiber Bridging Modelling in Composite Samples

889 **Fabrice Pierron and Alain Vautrin**

New Ideas on the Measurement of the In-Plane Shear Strength of Unidirectional Composites

896 **M. L. Morrás, M. Rodríguez, L. M. León, P. Bilbao and F. J. Ereño**

Acoustic Emission Applied to Pipes of GFRP That Have Been Exposed to Corrosive Mediums

910 **John P. O'Rourke, Marc S. Ingber and Martin W. Weiser**

The Effective Elastic Constants of Solids Containing Spherical Exclusions

935 **Dong Sheng Li and Michael R. Wisnom**

Evaluating Weibull Parameters for Transverse Cracking in Cross-Ply Laminates

Vol. 31, pp. 953–1059

CONTENTS

No. 10, 1997

954 **Youssef M. Ismail and George S. Springer**

Interactive Simulation of Resin Transfer Molding

981 **Vistasp M. Karbhari**

Progressive Crush of Resin Transfer Molded Square Tube Stiffened Beam Elements

1002 **James Ting-Shun Wang, Hua-Nan Pu and Chien-Chang Lin**

Buckling of Beam-Plates Having Multiple Delaminations

1026 **J. S. Sirkis and R. Grande**

Non-Linear Analysis of Ductile Metal Coated Optical Fiber Sensors Embedded in a Unidirectional Laminate

1046 **Ming-Jen Pan, David J. Green and John R. Hellmann**

Residual Stresses in Composites with Coated Particles

Vol. 31, pp. 1061–1161 # CONTENTS No. 11, 1997

1062 M. L. Gambone and F. E. Wawner

The Effect of Surface Flaws on SiC Fiber Strength in an SiC/Ti-Alloy Composite

1080 L. Boniface, P. A. Smith, M. G. Bader and A. H. Rezaifard

Transverse Ply Cracking in Cross-Ply CFRP Laminates—Initiation or Propagation Controlled?

1113 Hon-Wen Yu and Wen-Bin Young

Optimal Design of Process Parameters for Resin Transfer Molding

1141 Y. F. Chen, K. A. Stelson and V. R. Voller

Prediction of Filling Time and Vent Locations for Resin Transfer Molds

Vol. 31, pp. 1163–1260 CONTENTS No. 12, 1997

1164 Vistasp M. Karbhari, Paul J. Falzon and Israel Herzberg

Energy Absorption Characteristics of Hybrid Braided Composite Tubes

1187 Ramesh V. Marrey and Bhavani V. Sankar

A Micromechanical Model for Textile Composite Plates

1214 Tomas Ireman and Ingvar Eriksson

Strength of Composite Laminates Containing Holes and Subjected to Complex Loading Conditions

1249 Yu. M. Tarnopol'skii and V. L. Kulakov

Applied Problems of Mechanics of Composite Structures

Vol. 31, pp. 1261–1361 CONTENTS No. 13, 1997

1262 N. K. Gupta, R. Velmurugan and S. K. Gupta

An Analysis of Axial Crushing of Composite Tubes

1287 Y. T. Zhu, W. R. Blumenthal and T. C. Lowe

Determination of *Non-Symmetric* 3-D Fiber-Orientation Distribution and Average Fiber Length in Short-Fiber Composites

1302 T. Ebeling, A. Hiltner, E. Baer, I. M. Fraser and M. L. Orton

Delamination Failure of a Single Yarn Glass Fiber Composite

1318 T. Ebeling, A. Hiltner, E. Baer, I. M. Fraser and M. L. Orton

Delamination Failure of a Woven Glass Fiber Composite

1334 Dwight W. Swett and Geoffrey R. Shiflett

Edge Stresses in a Composite Strip Subjected to Axial Temperature Gradients, Part I: Development of the Theoretical Solution

Vol. 31, pp. 1363–1460 # CONTENTS No. 14, 1997

1364 W. J. Cantwell

The Influence of Loading Rate on the Mode II Interlaminar Fracture Toughness of Composite Materials

1381 Jin Ho Choi and Dai Gil Lee

Torque Capacity of Co-Cured Tubular Lap Joints

1397 Alfredo Balacó de Morais and António Torres Marques

A Micromechanical Model for the Prediction of the Lamina Longitudinal Compression Strength of Composite Laminates

1413 M. R. Ehsani, H. Saadatmanesh and S. Tao

Bond Behavior of Deformed GFRP Rebars

1431 M. Manoharan and M. Gupta

Effect of Heat Treatment and Interfacial Characteristics on the Work Hardening Behaviour of a SiC Reinforced Aluminum Metal-Matrix Composite

1442 Xiaoxue Diao, Lin Ye and Yiu-Wing Mai

Statistical Fatigue Life Prediction of Cross-Ply Composite Laminates

Vol. 31, pp. 1461–1554 CONTENTS No. 15, 1997

1462 **M. F. S. F. de Moura, J. P. M. Gonçalves, A. T. Marques and P. M. S. T. de Castro**

Modeling Compression Failure after Low Velocity Impact on Laminated Composites Using Interface Elements

1480 **C. Wang and C. T. Sun**

Experimental Characterization of Constitutive Models for PEEK Thermoplastic Composite at Heating Stage During Forming

1507 **Srinivasan Sridharan and Virendra R. Jadhav**

A Comparative Study of Square Cell and Circular Cell Micro-Models

1534 **D. Harmon, K. L. Jerina and S. M. L. Sastry**

Microstructural Differences between Woven Mat and Acrylic Binder TMC and Their Relationship to Fatigue Damage Modes

Vol. 31, pp. 1555–1670 CONTENTS No. 16, 1997

1556 **T. Kim, D. Steadman, S. V. Hanagud and S. N. Atluri**

On the Feasibility of Using Thermal Gradients for Active Control of Interlaminar Stresses in Laminated Composites

1574 **Dwight W. Swett and Geoffrey R. Shiflett**

Edge Stresses in a Composite Strip Subjected to Axial Temperature Gradients Part II: Evaluation of Numerical Results

1593 **Deborah J. Kelsey, George S. Springer and Stuart B. Goodman**

Composite Implant for Bone Replacement

1633 **S. Kyriakides and A. E. Ruff**

Aspects of the Failure and Postfailure of Fiber Composites in Compression

Vol. 31, pp. 1671–1777 # CONTENTS No. 17, 1997

1672 Ba Nghiep Nguyen

Three-Dimensional Modeling of Damage in Laminated Composites Containing a Central Hole

1694 Peter J. Joyce, Danielle Kugler and Tess J. Moon

A Technique for Characterizing Process-Induced Fiber Waviness in Unidirectional Composite Laminates—Using Optical Microscopy

1728 Danielle Kugler, Peter J. Joyce and Tess J. Moon

Investigation of the Effect of Part Length on Process-Induced Fiber-Wrinkled Regions in Composite Laminates

1758 J. P. Nunes, C. A. Bernardo, A. S. Pouzada and D. D. Edie

Formation and Characterization of Carbon/Polycarbonate Towpregs and Composites

Vol. 31, pp. 1779–1882 # CONTENTS No. 18, 1997

1780 J.-M. Berthelot

Analysis of the Transverse Cracking of Cross-Ply Laminates: a Generalized Approach

1806 Ming Xie and Vistasp Karbhari

Peel Test for Characterization of Polymer Composite/ Concrete Interface

1826 M. O. W. Richardson, C. M. Branco and J. A. M. Ferreira

The Effect of Test Conditions on the Fatigue Properties of a Phenolic Composite

1838 D. R. Atodaria, S. K. Putatunda and P. K. Mallick

A Fatigue Crack Growth Model for Random Fiber Composites

1856 S. D. Durham, J. D. Lynch, W. J. Padgett, T. J. Horan, W. J. Owen and J. Surles

Localized Load-Sharing Rules and Markov-Weibull Fibers: A Comparison of Microcomposite Failure Data with Monte Carlo Simulations

Vol. 31, pp. 1883–1998 CONTENTS No. 19, 1997

1884 **Akbar Afaghi-Khatibi and Lin Ye**

Residual Strength Simulation of Fibre Reinforced Metal Laminates Containing a Circular Hole

1905 **Andrew A. Wereszczak, Mattison K. Ferber and Azar Parvizi-Majiki**

Directional Dependence of Fracture Toughness in Hot-Pressed SiC-Whisker Reinforced Alumina at Room and Elevated Temperatures

1921 **J. P. Solti, S. Mall and D. D. Robertson**

Modeling of Fatigue in Cross-Ply Ceramic Matrix Composites

1944 **Toru Itoh and George S. Springer**

Strain Measurement with Microsensors

1985 **S. De Santis, F. Trochu, G. Ostiguy, H. Sol and J.-M. Berthelot**

Material and Structural Characterization of the Dynamic Behavior of Shape Memory Alloy Reinforced Composites

Vol. 31, pp. 1999–2122

CONTENTS

No. 20, 1997

2000 **S. Kyriakides and A. E. Ruff**

Aspects of the Failure and Postfailure of Fiber Composites in Compression

2038 **Ramazan Kahraman and John F. Mandell**

Transverse Fracture Study of a Ceramic Composite by Double Torsion Technique under Oxidizing Conditions

2052 **Q. Sh. Bai, S. Murakami and Y. Kanagawa**

A Lamination Theory Incorporating the Effect of Interlaminar Deformation

2074 **A. Bansal and M. Kumosa**

Mechanical Evaluation of Axially Loaded Composite Insulators with Crimped End-Fittings

2105 **Dae-Hwan Kim, Poong-Gyu Han, Geun-Ha Jin and Woo Il Lee**

A Model for Thermosetting Composite Pultrusion Process

Vol. 31, pp. 2123–2227 CONTENTS No. 21, 1997

2124 Y. F. Wen, R. F. Gibson and J. L. Sullivan

Prediction of Momentary Transverse Creep Behavior of Thermoplastic Polymer Matrix Composites Using Micromechanical Models

2146 S. F. Shuler and S. G. Advani

Flow Instabilities during the Squeeze Flow of Multiaxial Laminates

2161 Jin-Ho Jeong and Yong-Taek Im

Estimation of Sink Mark Depth in Compression Molded SMC Parts with Substructures

2188 Seung Woo Lee, Dai Gil Lee and Kwang Seop Jeong

Static and Dynamic Torque Characteristics of Composite Cocured Single Lap Joint

2202 S. Padaki and L. T. Drzal

A Consolidation Model for Polymer Powder Impregnated Tapes

Vol. 31, pp. 2229–2327 # CONTENTS No. 22, 1997

2230 C. Wang and C. T. Sun

Thermoelastic Behavior of PEEK Thermoplastic Composite during Cooling from Forming Temperatures

2249 D. M. Cise and R. S. Lakes

Moisture Ingression in Honeycomb Core Sandwich Panels: Directional Aspects

2264 Jin Soo Kim and Dai Gil Lee

Development of an Autoclave Cure Cycle with Cooling and Reheating Steps for Thick Thermoset Composite Laminates

2283 Donald F. Adams and Garth A. Finley

Analysis of Thickness-Tapered Unidirectional Composite Compression Specimens

2309 C. H. Chiu, C. K. Lu and C. M. Wu

Crushing Characteristics of 3-D Braided Composite Square Tubes

Vol. 31, pp. 2329–2423 CONTENTS No. 23, 1997

2330 Andrew S. Fine and George S. Springer

Design of Composite Laminates for Strength, Weight, and Manufacturability

2391 P. S. Razi, A. Raman and R. Portier

Studies on Mechanical Properties of Wood-Polymer Composites

2402 Hossein Golestanian and A. Sherif El-Gizawy

Cure Dependent Lamina Stiffness Matrices of Resin Transfer Molded Composite Parts with Woven Fiber Mats

Vol. 31, pp. 2425–2513 # CONTENTS No. 24, 1997

2426 Guigen Zhang and Robert A. Latour, Jr.

The Prevention of Kink Band Formation at Free Edges of Unidirectional Composite under Compressive Load

2444 Richard D. Hale and Daniel O'Hare Adams

Influence of In-Plane Fiber Misalignment on Moiré Interferometry Results

2460 Wan-Lee Yin

The Effect of Temperature Gradient on the Free-Edge Interlaminar Stresses in Multi-Layered Structures

2478 Thomas S. Gates, David R. Veazie and L. C. Brinson

Creep and Physical Aging in a Polymeric Composite: Comparison of Tension and Compression

2506 Subject Index
Author Index